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54 **Attachment device for an endoprosthesis.**

57 A human joint implant, for example a knee prosthesis has a working part formed with a stub 1 of conical profile that snap-fits into a stem 2 that forms an anchorage in a bone cavity. The stub 1 may carry a stud 5 at its end that is a snap-fit into a ferrule 4. A flanged sleeve 3 fits between the stub 1 and a conical socket part 6 of the stem 2.

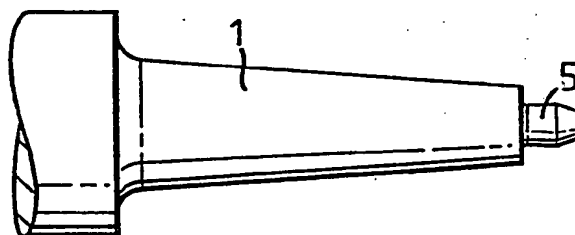


FIG. 3

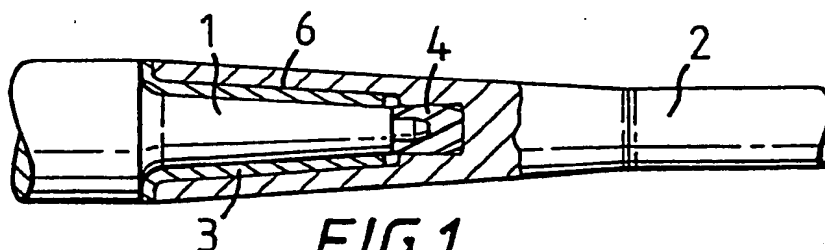


FIG. 1

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ATTACHMENT DEVICE

The present invention relates to an attachment device particularly, though not exclusively for attachment of an elbow, hip or knee prosthesis to an adjacent bone.

When a joint prosthesis is implanted in a human patient after a period of time failure may occur either in the working parts of the joint or in the anchorage between the joint and the adjacent bone. A requirement may arise to leave the anchor in place and replace the working parts of the joint, or to leave the joint in place and replace the anchor. Up to the present time, however, the anchoring parts and the working parts of the joint have not been provided as separate components because there has not been proposed a simple but strong mechanism for connecting an anchor to a working part of the joint.

This invention provides a human joint implant having a working part that is a snap-fit into a bone anchor part.

Amongst the advantages that flow from this construction is that the surgeon fitting an implant to a patient is able to select a bone anchor part from amongst a number of different such parts during an operation depending upon the condition of the patient's bone.

The invention also provides an implant for fitting into a bone of a patient comprising a first member for fitting into the bone a second member for attachment to the first member, portions of the first and second members defining a cone and socket joint, and means for releasably latching the first and second members together on insertion of the cone into the socket.

The first and second members are normally of a cobalt/nickel/molybdenum alloy such as Stellite or other physiologically acceptable metallic materials in which case these members are preferably separated by a flanged sleeve of non-metallic material that fits between the cone and socket portion of the joint. Thus, the flanged sleeve may be of ultra high molecular weight polyethylene or other physiologically acceptable material.

In a preferred attachment structure, the releasable latching means acts between an end of the cone and the base of the socket. Thus the end of the cone may have a divergent male connecting stud extending axially therefrom that snap-fits into a non-metallic female connector at the base of the socket.

An embodiment of the invention will now be described, by way of example only with reference to the accompanying drawings in which Figure 1 is a section of a snap-fit mechanism for attaching one half of a human joint prosthesis to adjacent bone;

Figure 2 is a partly sectioned view of a stem forming part of the joint of Figure 1; Figure 3 is a side view of a stub forming part of the joint, and Figure 4 is a section of a ferrule.

In the drawings, a hinge part of an artificial knee or hip joint has a stub 1 of conical profile projecting from its blind face. The stub 1 terminates at a relatively small outwardly diverging stud 5.

The stub 1 fits into a stem 2 that forms an anchorage into a cavity in the bone in which the stem 2 is either a push-fit or is cemented. The stem 2 terminates at a socket 6 of conical form having a small outwardly tapered recess 7 at its blind end. A locking ferrule 4 of plastics material has a tapered side surface 8 that matches the taper of the recess 7 so that the ferrule 4 is a snap-fit in the recess 7. A flanged tapered sleeve 3 of conical profile fits between the stub 1 and the socket 6. When the stub 1 is inserted into the socket 6, the stud 5 at its end is a snap-fit into the ferrule 4. If either the working part of the joint or the stem 2 have to be removed during the life of the prosthesis the stub 1 can be pulled from the stem 2.

Although the stub 1 and stem 2 are held only lightly together against movement axially apart, this is not a problem in practice particularly in leg joints, because bones are subject to compressive and torsional loads but not significantly to tensile loads.

Claims

1. An implant for fitting to a bone of a patient comprising a first member for fitting into the bone, a second member for attachment to the first member, portions of the first and second members defining a cone and socket joint, and means for releasably latching the first and second members together on insertion of the cone into the socket.

2. A implant according to claim 1 wherein a flanged sleeve of non-metallic material fits between the cone and socket portions of the joint.

3. An implant according to claim 2, wherein the flanged sleeve is of a physiologically acceptable plastics materials.

4. An implant according to any preceding claim, wherein the releasable latching means acts between the end of the cone and the base of the socket.

5. An implant according to claim 4, wherein the end of the cone has a divergent male connector that snap-fits into a non-metallic female connector at the base of the socket.

6. An implant according to any preceding claim which is part of a prosthetic joint.

7. An implant according to claim 6, which is part of a knee joint.

8. An implant according to claim 6, which is part of a hip joint. 5

9. A human joint implant having a working part that is a snap-fit into an anchor for anchoring into bone.

10. An implant according to claim 9, wherein the working part is a releasable snap-fit into the anchor in the bone. 10

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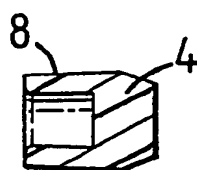
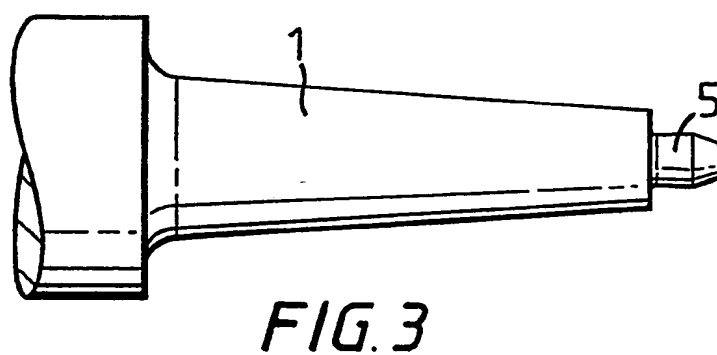
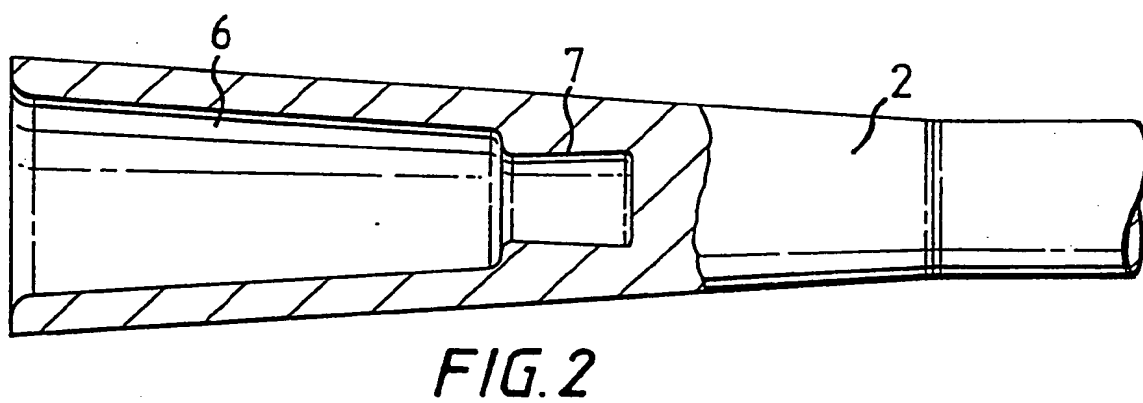
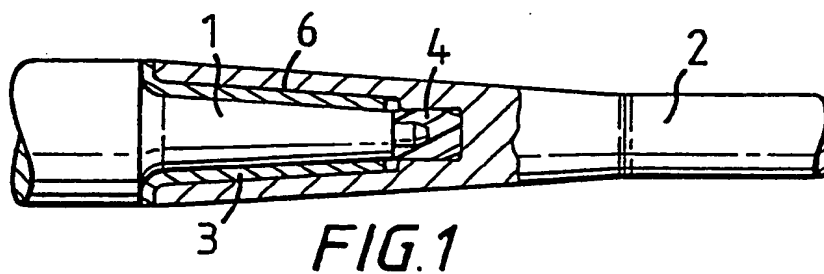


FIG. 4



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EUROPEAN SEARCH REPORT

Application Number

EP 89 31 0631

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	FR-A-2 391 711 (SULZER) * Claim 1, lines 1-6; claim 2; figures 1,2 *	1-4,6,8	A 61 F 2/36 A 61 F 2/38 A 61 F 2/30
Y	---	5,7	
X	FR-A-2 616 060 (A. TORNIER) * Page 3, lines 2-13; figure 2 *	1,4,6,8	
X	DE-U-8 605 597 (ORTHOPLANT) * Page 6, last paragraph - page 7, line 3; claims 1,2; figure 1 *	1,6-8	
Y	---	7	
X	US-A-4 100 626 (R.C. WHITE) * Claim 6; column 3, lines 31-38; figure 2 *	1,4-6,9,10	
Y	---	5	
A	FR-A-2 384 489 (ROSENTHAL) * Claim 1; figure 4 *	5	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			A 61 F A 61 C F 16 B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 09-01-1990	Examiner VILLENEUVE J-M. R. J.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

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